

100

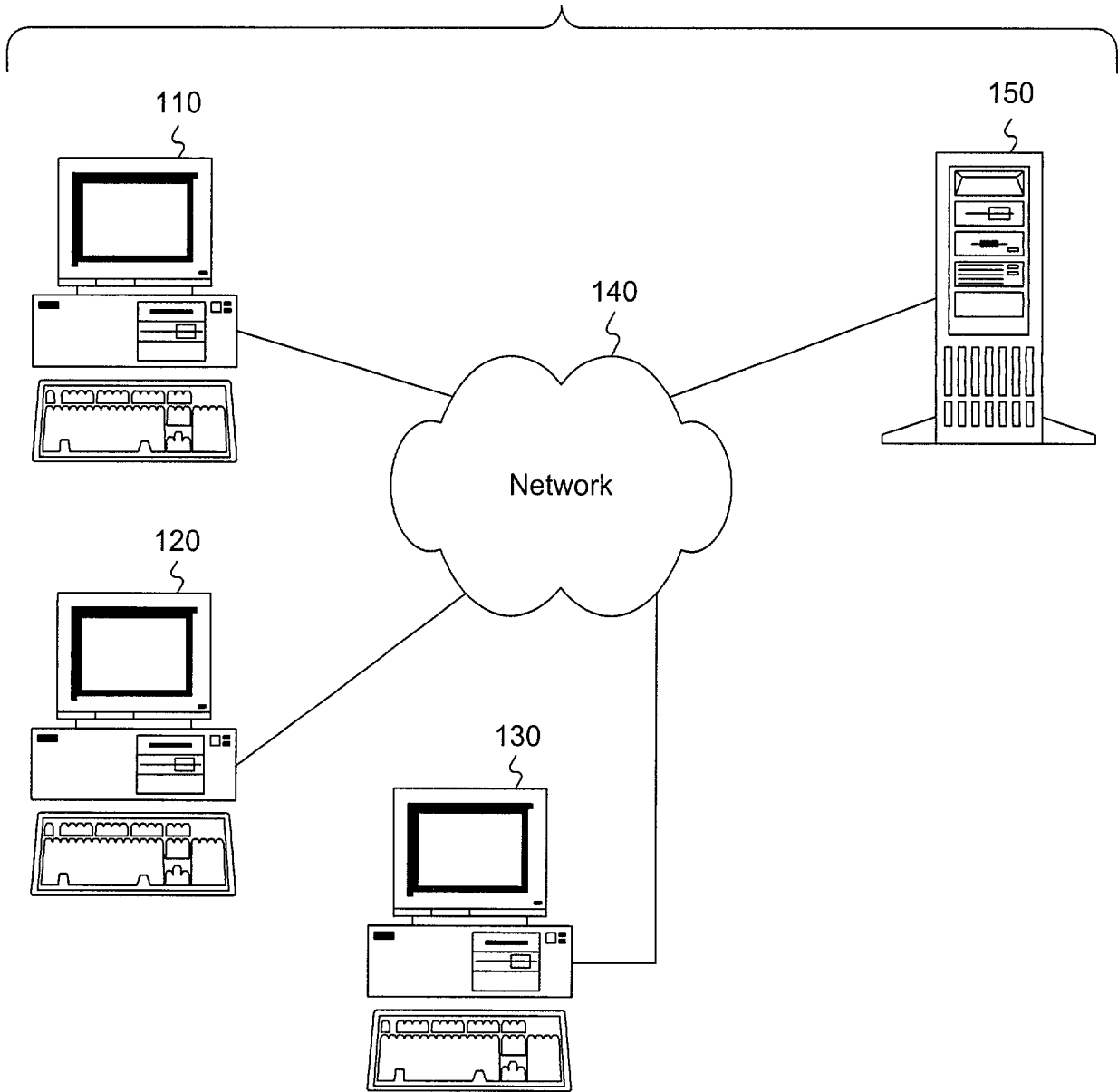


Figure 1

~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~

[illegible]

Kalamazoo River

(please enter again to confirm)

When you are finished, please click on the "Register" button below to send your registration information to the NutrientNet staff.

1. The first part of the document is a list of references. The references are listed in a standard format, with the author's name, the title of the work, and the publisher. The references are as follows:

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Figure 2

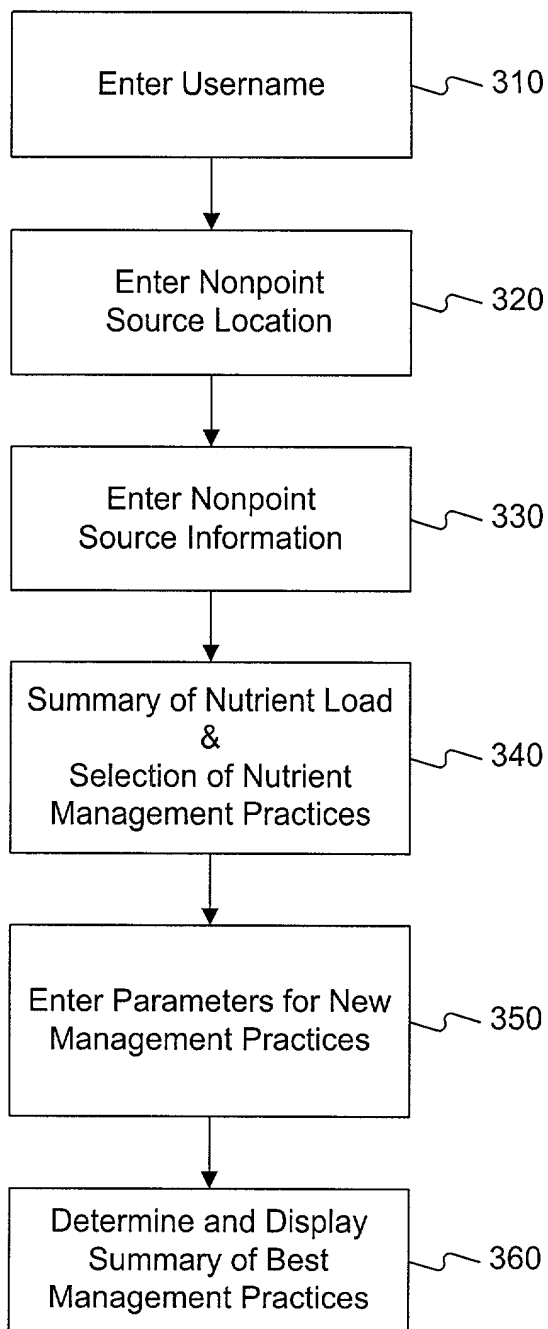


Figure 3

Figure 4

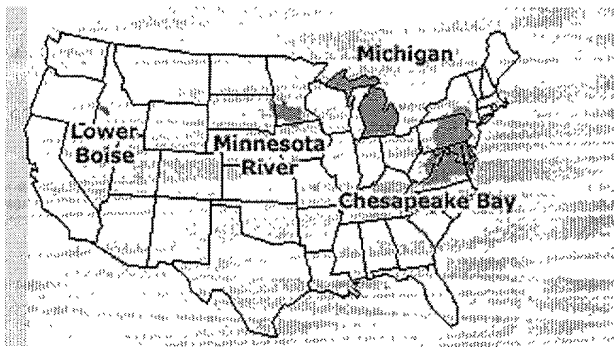


Figure 5A

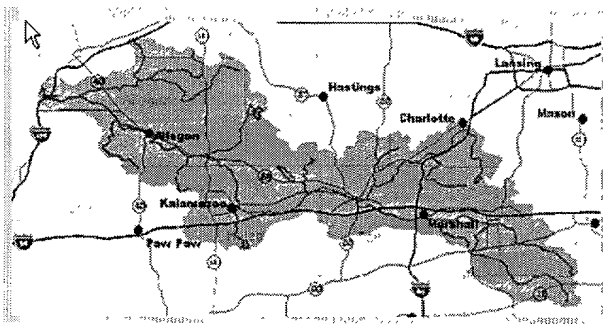


Figure 5B

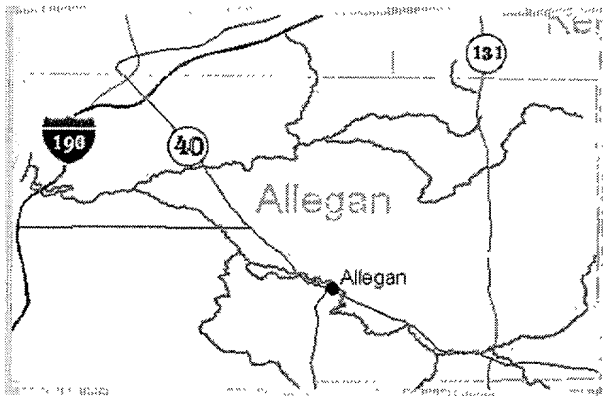


Figure 5C

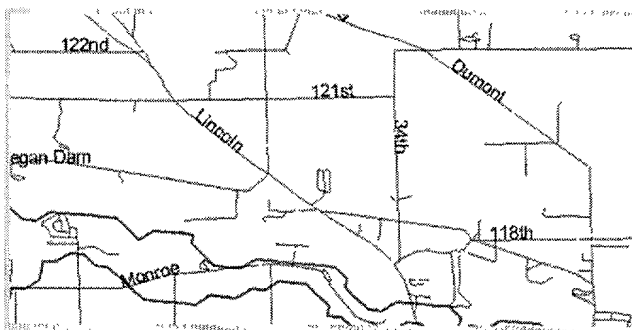


Figure 5D

Please fill in this information so that the current nutrient run-off from your farm can be calculated. When you are done, click the "Continue" button to proceed to the next step.

Field area acres

Slope Steepness

Slope length feet

Phosphorus content lbs. per ton of soil (the result of a soil test may be used here)

Current crop

Previous crop

Current tillage practice

Filter strip width (if applicable)

[Continue](#)

Figure 6

Here is a summary of your farm information and the phosphorus load that was calculated based on your inputs and the characteristics of the soil at your location:

Area of field 300 acres

Soil name MARLETTE

Current crop corn for grain (100 bu)

Previous crop corn for grain

Tillage practice fall plow

Filter strip width none

Phosphorus load 167 lbs. per year

Please select either one or two of the following nutrient management practice to evaluate then click the "Continue" button. If you select two management practice you will be able to review the impact of each option individually, plus both options together. After selecting your management practice(s) you will be prompted to enter detailed implementation information.

☒ Conservation tillage Type: **Mulch (10% residue)**

☐ Constructed wetland

☐ Sediment basin

☒ Filter strip Type: **Hay**

Note: a multi-species filter strip consists of three zones from the water edge. The first zone is planted with trees (50%), followed by shrubs (30%) and grass (20%).

Continue

Figure 7

0906790 4004

TILLAGE INFORMATION		
Please indicate which of the following tillage practices you use currently, and which you would use in conjunction with the new tillage practice:		
	current	new
Plow/chisel plow	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Harrow	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cultipacker	<input type="checkbox"/>	<input type="checkbox"/>
Bushhog	<input type="checkbox"/>	<input type="checkbox"/>

ECONOMIC INFORMATION		
Duration of project	15	years
Interest rate	7	%
Cost share contract length	15	years
Annual subsidy	5	\$/acre

Continue

Figure 8A

Please enter the following details about the constructed wetland management practice you wish to evaluate. When you are done, please click the "Continue" button at the bottom.

PROJECT INFORMATION

Wetland size 4 acres
Ditch length to be filled 100 feet

INSTALLATION COST

Cost of shaping and grading 255 \$ / acre
Cost to fill ditch 3 cubic yard
Cost of wet-adapted seedlings 88 \$ / acre
Cost of planting 110 \$ / acre
Cost of tree shelters, mesh mats 386 \$ / acre
Cost of equipment mobilization 200 \$

ECONOMIC INFORMATION

Duration of project 15 years
Interest rate 7 %
Land rent 120 \$ / acre
Cost share contract length 15 years
Cost share sign-up bonus 150 \$ / acre
Establishment contribution 500 \$ / acre
Land rent contribution 90 \$ / acre / year

Continue

Figure 8B

Please enter the following details about the sediment basin management practice you wish to evaluate. When you are done, please click the "Continue" button at the bottom.

Duration of project 15 years

Interest rate 7 %

Installation cost share 75 % (enter "0" if no cost share)

Earth removal 320 cubic yards

Cost of excavation 2.5 \$ / cubic yard

Cost of inlet & outlet pipe 460 \$

Gravel delivered 5 tons

Cost of equipment mobilization 200 \$

Continue

Figure 8C

FILTER STRIP INFORMATION

Strip width 25 feet

Strip length 0.5 mile(s) (length of field adjacent to waterway)

Hay production	4.5	tons/acre
----------------	-----	-----------

ECONOMIC INFORMATION

Duration of project 5 years

Interest rate	7.0	%
---------------	-----	---

Land rent	120	\$/acre/year
-----------	-----	--------------

Seed cost	50	\$/acre
-----------	----	---------

Fertilizer cost	40	\$/acre
-----------------	----	---------

Harvest cost	35	\$/ton
--------------	----	--------

Tillage cost	15	\$/acre
--------------	----	---------

Hay price	1	\$/ton
-----------	---	--------

Continue

Figure 8D

Summary of Best Management Practices

Click on the name of a management practice to see details of its implementation. Click on the number of credits available to post an offer for those credits.

According to Michigan's regulation the trading ratio is 2:1, which means that every pound of Phosphorus generated by a point source has to be offset by 2 pounds of Phosphorus reduced by a non-point source.

With cost sharing				
Best Management Implementation Practice	Cost per year	Cost per pound of Phosphorus runoff reduced	Cost per available Phosphorus for trading reduction (click to post offer)	Phosphorus credits
Conservation tillage	\$900.00	\$35.00	\$70.00	0
Filter strip	\$400.00	\$10.40	\$20.80	19
Both options	\$500.00	\$8.58	\$17.20	0
Conservation tillage	\$900.00	\$35.00	\$70.00	0
Filter strip	\$400.00	\$10.40	\$20.80	19
Both options	\$500.00	\$8.58	\$17.20	0
Conservation tillage	\$1,710	\$19.10	\$38.20	24

Without cost sharing				
Best Management Implementation Practice	Cost per year	Cost per pound of Phosphorus runoff reduced	Cost per available Phosphorus for trading reduction (click to post offer)	Phosphorus credits
Conservation tillage	\$600.00	\$23.30	\$46.60	13
Filter strip	\$400.00	\$10.40	\$20.80	19
Both options	\$1,000	\$17.10	\$34.30	29
Conservation tillage	\$600.00	\$23.30	\$46.60	13
Filter strip	\$400.00	\$10.40	\$20.80	19
Both options	\$1,000	\$17.10	\$34.30	29
Conservation tillage	\$3,210	\$35.90	\$71.80	45

Figure 9

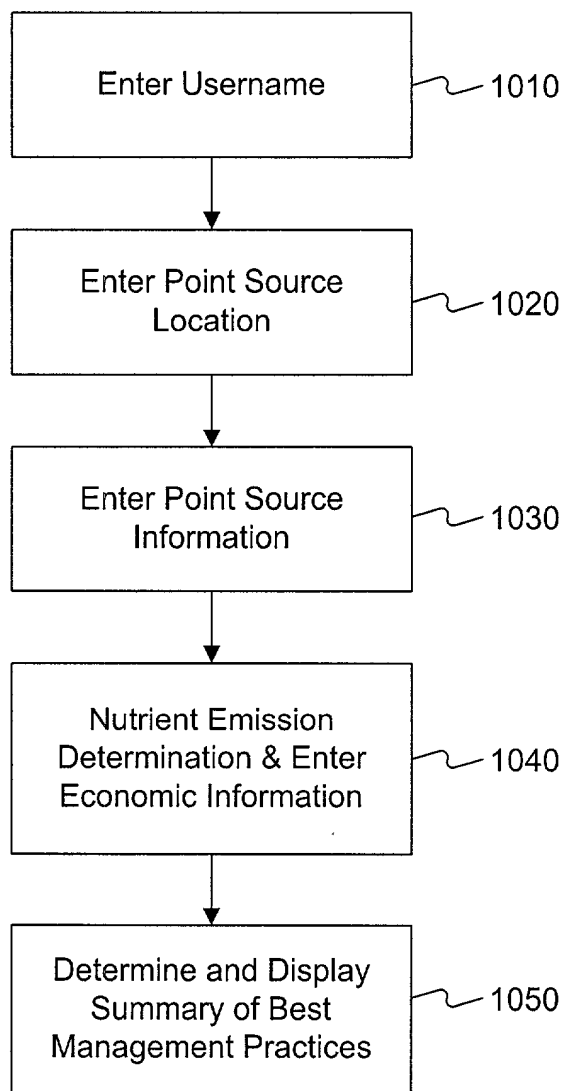


Figure 10

0096700 4000
00007 009660

Point Source Worksheet

- Enter your NutrientNet username and Proceed to worksheets
- New users register here
- About the worksheets

Figure 11

FOOT 00238600

Please fill in this information so that the current phosphorus emissions from your facility can be calculated. When you are done, click the "Continue" button to proceed to the next step.

What is your facility's
current water flow? million gallons / day

What is the Phosphorus
concentration of your
effluent? ppm

What is your current
phosphorus treatment
practice?

Figure 12

Your facility's current phosphorus emissions are estimated to be **304** tons per year.

What is the loading limit according your regulation?

0.5
ppm

Please enter the economics information requested, then click the "Continue" button.

ECONOMICS

Over how many years do you amortize capital investments?

30 years

What interest rate do you pay on capital improvement loans?

5.0 %

Continue

Figure 13

Summary of Best Management Practices

Click on the name of a management practice to see details of its implementation. Click on the number of credits available to post an offer for those credits.

According to Michigan's regulation the trading ratio is 2:1, which means that every pound of Phosphorus generated by a point source has to be offset by 2 pounds of Phosphorus reduced by a non-point source.

Current treatment:	no treatment
Current P Emissions:	304 tons/yr.
P Emissions limit according your regulation:	38 tons/yr.
Current O & M Annual Cost:	\$0.00 million/yr.
Current Capital Upgrade Annual Cost:	\$0.00 million/yr.
Current Total Annual Cost:	\$0.00 million/yr.

Best Management Practice	Phosphorus reduction (tons/yr.)	Total annual cost (mil.)	Cost to switch treatment (mil.)	Cost per pound of Phosphorus reduction	Credits needed to comply	Credits available for trading
standard chemical phosphorus removal	243.2	\$4.38	\$4.38	\$9.00	45600	0
maximum chemical phosphorus removal without filtration	273.6	\$4.98	\$4.98	\$9.10	0	15200
standard chemical phosphorus removal with filtration	288.8	\$6.84	\$6.84	\$11.80	0	45600
biological phosphorus removal	243.2	\$1.64	\$1.64	\$3.38	45600	0
biological phosphorus removal with filtration	288.8	\$6.57	\$6.57	\$11.40	0	45600

Figure 14

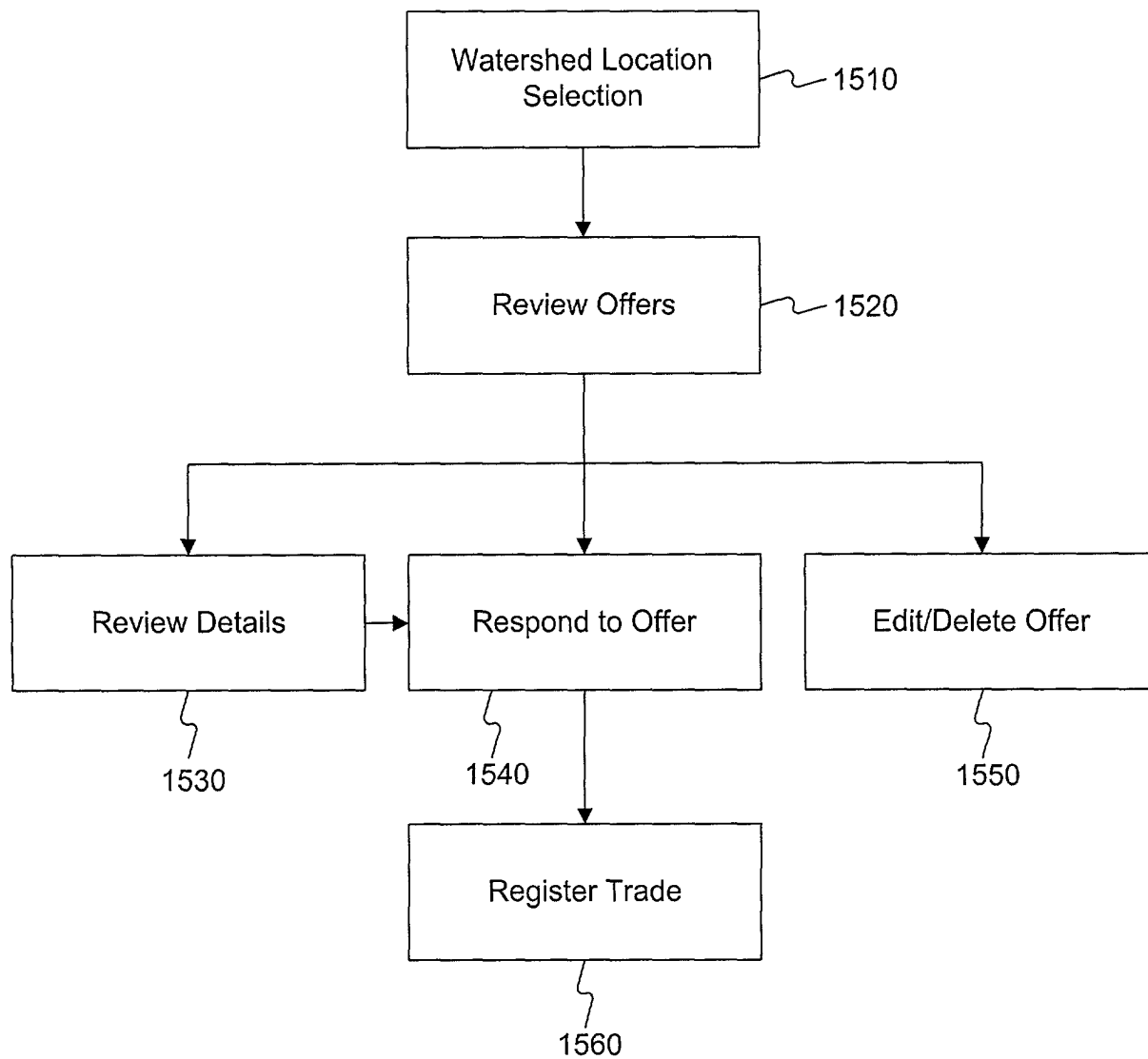


Figure 15

FOOT" 0623660

Watershed

Display offers to

Nutrient

Figure 16

Details... gives you more information on a specific offer.

Respond... allows you to bid on the offer or to make questions about the offers.

Edit/Delete... allows you edit or delete your offer.

Quantity	Price	Submitted by	Offer date	Close date	Actions
172 credits	\$3.75	Empire	June 14, 2001	June 14, 2001	Details... Respond... Edit/Delete...
1328 credits	\$4.75	Ground	June 14, 2001	June 14, 2001	Details... Respond... Edit/Delete...
230 credits	\$4.98	trade	June 14, 2001	June 14, 2001	Details... Respond... Edit/Delete...
152 credits	\$2.30	patricia	June 14, 2001	June 14, 2001	Details... Respond... Edit/Delete...
631 credits	\$3.70	Corn	June 14, 2001	June 14, 2001	Details... Respond... Edit/Delete...
500 credits	\$1.50	Nitrous	June 14, 2001	June 14, 2001	Details... Respond... Edit/Delete...

Figure 17

Offer Details

Here are the details of the offer you selected:

User name: Empire

Watershed: Kalamazoo River

Offer to: Sell

Nutrient: Phosphorous

Quantity: 172 credits

Asking price: \$ 3.75 per credit

Third party certification: Yes

Date offer closes: 6/14/2001

Notes: Time to get serious

If you are a registered NutrientNet user you may click on the "Respond to offer" button below to bid on the offer or ask for more information about it. You can also return to the list of offers.

[Respond to offer](#)

Figure 18A

Respond to Offer

You have chosen to respond to this offer:

User name Empire

Watershed Kalamazoo River

Offer to Sell

Nutrient Phosphorous

Quantity 172 credits

Asking price \$ 3.75 per credit

Third party certification Yes

Date offer closes 6/14/2001

Notes Time to get serious

Please fill in the following information, then click on the "Preview response" button. You will then have a chance to review your response before submitting it.

NutrientNet user name:

Password:

I wish to: Bid on this offer

Comments & questions:

The "Comments & questions" field is for any additional information you wish to provide to or request from the person who submitted the offer.

Preview response

Clear form

Figure 18B

Edit or Delete Offer # 33

If you posted this offer and would like to delete or edit it, enter your NutrientNet password in the field below and click 'Delete offer' or 'Edit Offer'.

User name Empire

Watershed Kalamazoo River

Offer to Sell

Nutrient Phosphorous

Quantity 172 credits

Asking price \$ 3.75 per credit

Third party certification Yes

Date offer closes 6/14/2001

Notes Time to get serious

Password:

Edit offer

Delete offer

Figure 19

Register a Trade

Please register your nutrient credit trade using the form below. Seller must register trade.

Traders' Information

Seller's NutrientNet Username: testjb

Seller's NutrientNet Password:

Buyers's NutrientNet Username:

Transaction Information

Watershed: Kalamazoo River ▼

Nutrient: Phosphorous ▼

Number of Credits Transacted:

Price per credit:

Date of Transaction:

October ▼

10 ▼

2001 ▼

Figure 20

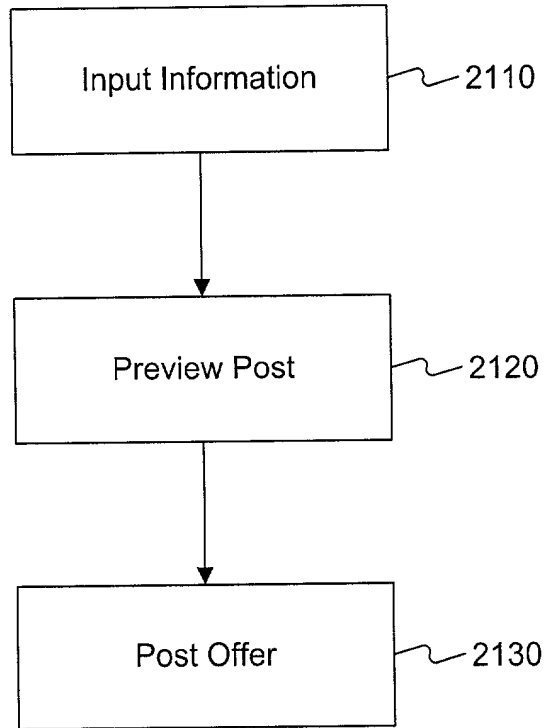


Figure 21

Once you have submitted an offer, you may use the [view offers](#) form to see your post, make changes, delete, or respond to other offers.

User name	<input type="text"/>
Password	<input type="password"/>
Watershed	Kalamazoo River
Offer to	Buy
Nutrient	Phosphorous
Quantity	<input type="text"/> credits
Asking price	<input type="text"/> \$ per credit
Third party certification	Yes
Date offer closes	October 10 2001
Notes	<div><div></div><div></div></div>
<div>Preview posting</div> <div>Clear form</div>	

Figure 22

Trade Registry

Below is a summary of trading activity in the NutrientNet database:

Show Trading History

Seller	Buyer	Watershed	Nutrient	Quantity	Date
amigrace	Yooselling	Kalamazoo River	Phosphorous	304	June 14th 2001
Buffer	Yooselling	Kalamazoo River	Phosphorous	1830	June 14th 2001

Show Trading History

Figure 23